SERA 2.0 GARUDA - NEXT GENERATION CARGO AIRCRAFT

SRM ENVIRONMENTALLY RESPONSIBLE AVIATION FOR FUTURE CARGO AIRCRAFTS

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DESIGN PROPOSAL

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ABSTRACT

The recent awareness about the impacts of air transport on the environment has raised issues of replacing conventional aircrafts with jets designed and developed with green aircraft technologies. Such technologies will help reduce emissions from aircrafts and have a less adverse effect on the environment. NASA on its behalf has taken up ambitious goals in terms of noise pollution, harmful gases emission and fuel burn reduction. The SRM Aerospace Design Team (SRMAeDe) presents the SERA Garuda designed to meet the ambitious goals set by NASA and make an impact in the field of green aircraft technology reducing emissions, fuel burn without compromising on other aspects of flying. The SERA Garuda will be one of a kind cargo aircraft with innovative airframe design, better engine design with use of heat exchangers and reduced combustion temperature technology to reduce emission and LDI and activated oxygen technology to cut down on emissions of NOx and reduce the fuel burn for every segment of the mission. Also we have state of art avionics system incorporated with neural networks to reduce influence of pilots in cockpit. The use of advanced materials, improved manufacturing technology and aircraft management procedures will also reduce cost of operating and maintenance in the long run.

The SERA Garuda can fly for 6500miles at cruise mach of 0.85 carrying a payload of 100,000lbs . The aircraft will be the perfect cargo carrier for long range operations, without compromising on emission standards, in fact enhancing upon them and also improved economy in flying due to reduction in fuel burn. The advanced technologies used has made SERA Garuda achieve NASA's N+2 goals with reduction in fuel burn up to 69.4%, reduction in noise up to 44.3dB below level 4, NOx emission reduction by 75%. Thereby , making SERA Garuda the best in class cargo carrier, with excellence in reduced emission and fuel burn standards hence making it economically more viable for production and operation.

The team believes that, design of SERA Garuda proposed in the following report achieves the vital goals set by NASA Environmentally Responsible Aviation Project for the 2020 timeframe. The SERA Garuda will be a pioneer in the class of long range cargo carriers and will be ready to replace the conventional aircrafts in the near future.